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A TAXONOMY OF CONCEPTS AND CRITICAL ABILITIES RELATED TO THE EVALUATION OF VERBAL ARGUMENTS.

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THE DEVELOPMENT OF CRITICAL THINKING ABILITIES IS A PERVASIVE AND IMPORTANT OBJECTIVE OF AMERICAN SECONDARY AND HIGHER EDUCATION. ALTHOUGH CRITICAL THINKING ABILITIES HAVE RECEIVED RECOGNITION AS WORTHY EDUCATIONAL GOALS, FEW STUDY GROUPS AND EVEN FEWER TEACHERS ARE ABLE TO DEFINE THE MEANS OF INSTRUCTION THROUGH WHICH SUCH GOALS ARE REALIZED. IN THIS PAPER ARE IDENTIFIED CONCEPTS AND CLUSTERS OF CONCEPTS WHICH DEFINE WHAT KNOWLEDGE A STUDENT MUST POSSESS IF HE IS TO CRITICALLY EVALUATE EVERYDAY DISCOURSE. THE TAXONOMY, COMPRISED OF 12 CONCEPT CLUSTERS AND RELATED CRITICAL ABILITIES, IS DERIVED FROM TOULMIN'S PRESENTATION OF INFERENCE AS A RULE-CONSTITUTED ACTIVITY AND FROM THE NATURE OF THE FIELD OF ORDINARY DISCOURSE. ARGUMENT IS SEEN AS AN ACTIVITY MADE POSSIBLE BY THE PARTICIPANTS' ACCEPTANCE OF RULES OF INFERENCE, BY THEIR MUTUAL AGREEMENT ON WHAT KINDS OF RESERVATIONS MUST BE SATISFIED TO ESTABLISH FORCEFUL CLAIMS. (AUTHOR)

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A TAXONOMY OF CONCEPTS AND CRITICAL ABILITIES RELATED TO THE EVALUATION OF VERBAL ARGUMENTS

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FOREWORD

The goal of the Wisconsin R & D Center is to contribute to an understanding of, and the improvement of educational practices related to, cognitive learning by children and youth. Learning of concepts and nurturing of related cognitive skills are areas of research in laboratories and in schools. Analysis of the conceptual structure of many subject fields is being conducted by Center staff. The Taxonomy presented in this Occasional Paper is an analysis of concepts related to the evaluation of ordinary argument and, as the first such analysis of that field, has relevance for all educators concerned with the development of critical thinking skills. Using the Taxonomy as a base, Professor Allen and his associates are now establishing norms for high school students' abilities in evaluating verbal argument and are developing programed materials embracing concepts related to the assessment of verbal argument.

Herbert J. Klausmeier
Director

PREFACE

> In a world where the child gets little help in evaluating the ideas in the comic strip, the movie "epic," the advertising "pitch," and the unspoken assumptions of the TV western, it seems important that school programs give help in developing critical thinking abilities.
>
> Encyclopedia of Educational Research, 1960, p. 652.

The development of critical thinking abilities is a pervasive and important objective of American secondary and higher education. In fact, it is difficult to find a serious statement of educational objectives which does not pay explicit or implicit tribute to such skills. In a similar fashion, one is hard pressed to find a teacher of speech, English, or social studies who does not claim improvement in critical thinking as a positive outcome of his course.

Although critical thinking abilities have received general and specific recognition as worthy educational goals, few study groups and even fewer teachers are able to define (even in a general way) the means of instruction through which such goals are realized. In most instances, the process of translating educational objectives into specific areas of content which may be organized and taught to students remains largely unaccomplished.

The purpose of this paper is to identify concepts and clusters of concepts which adequately define what knowledge a student must possess if he is to critically evaluate everyday discourse.

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I
INTRODUCTION

Although definitions of "critical thinking" are notoriously disparate, most authors and study groups would agree that critical thinking has something to do with "checking over" or testing ideas as they are presented in everyday encounters. This view of critical thinking assumes that a set of rules may be posited against which ideas and supporting arguments can be tested. This view further assumes that such rules have direct relevance to everyday discussions.

The purpose of this introductory essay is to explain the central notions utilized in constructing "A Taxonomy of Concepts and Critical Abilities Related to the Evaluation of Verbal Arguments." This essay will seek to show how a set of primary notions about the nature of argument may be used to generate criteria relevant to assessing arguments in everyday interactions. The problem will be discussed under three headings: (1) The Assumptive Basis of the Taxonomy, (2) The Field of Ordinary Argument, and (3) The Application of Toulmin's Analysis of Argument to the Generation of Taxonomic Concepts for the Field of Ordinary Discourse.

THE ASSUMPTIVE BASIS OF THE TAXONOMY

Within recent years strong discontent has been expressed by some philosophers with the methods and purposes of formal logicians. Much of this criticism has been stimulated by the belief that natural languages enable varieties and habits of inference not captured by the highly abstract systems of formal logic. The chief objection raised by these critics is aptly put by Gilbert Ryle:

> Of those to whom this, the formaliser's dream, appears a mere dream (I am one of them), some maintain that the logic of everyday statements and even the logic of the statements of scientists, lawyers, historians, and bridge-players cannot in principle be adequately represented by the formulae of formal logic. The so-called logical constants do indeed have, partly by deliberate prescription, their scheduled logical powers; but the non-formal expressions both of everyday discourse and of technical discourse have their own unscheduled logical powers, and these are not reducible without remainder to those of the carefully wired marionettes of formal logic [1963].

In addition to this criticism, Ryle and his associates claim that the less disciplined logical powers of natural language afford intelligible inferences amenable to thorough and thoughtful criticism.

Much of this criticism has focused upon the assumption, common to most systems of logic, that the terms and symbols used in articulating well-formed propositions either have or could be given meaning as names for persons, places, or events in the states of affairs which exist outside a particular logical program. Ryle, Austin (1963) and others have argued that the meaning of words and utterances in natural languages involves a good deal more than the coordination of names with a series of things referred to or designated by those names. Instead, they have suggested that the meaning of a word (Ryle, 1953) or the meaning of a sentence (Austin, 1962, 1963) is constituted by the uses to which a word can be put, the linguistic acts which can be performed with that word.

These critiques of reference theories of meaning suggest a re-examination of the kinds and uses of rules provided by systems of logic and theories of argument for evaluating the strength and correctness of inferences. Such a re-examination is provided by Toulmin's The Uses of Argument (1958). As his work provides the broad outline for the taxonomy presented in this paper and as his assumptions suggested the pattern of analysis used in constructing this Taxonomy, the first burden of this introduction will be to outline the central assumptions of Toulmin's work and the related view of argument he articulates.

Linguistic Acts Are Rule-Constituted Acts

The Uses of Argument does not present a full-blown theory of meaning; however its program assumes that questions about meaning are most happily phrased as questions about the ways in which linguistic units are used to perform linguistic acts. In discussing meaning as use, it is helpful to keep in mind a distinction between rule-governed acts such as parking a car, and rule-constituted acts such as playing chess (Black, 1962). In the former case the activity could be accomplished without reference to rules although some penalty (a parking ticket) might be incurred if the rules were violated; in the latter case the activity could not be undertaken if the rules were violated—without the rules there is no game. Although this distinction is not Toulmin's and is not expressed in his analysis, his examination of argument assumes that linguistic acts are rule-constituted acts. His analysis of describing, for example, assumes that to offer a "description" is to use words or sentences according to the bans, fiats, or conventions which enable descriptions, just as to make a promise is to use words or sentences according to the rules which constitute promising—i.e., being in a position to complete the specified proposal, intending to complete the specified proposal, understanding the kinds of physical acts required by the proposal, etc. (Toulmin and Baier, 1963). The account of description provided by Toulmin and Baier is an analysis of the conditions someone must satisfy in order for his utterances to be called a description—the rules he must conform to in order to perform an act of describing.

Argument Is a Complex Kind of Linguistic Activity

Toulmin assumes that to argue is to perform a linguistic act; that is, he assumes that the primary burden of a theory of argument is to provide an analysis of the ways in which rules constitute argument. The questions addressed in his Uses of Argument are all questions about how one uses rules of inference to engage in the act of arguing: Are the rules of inference the same in all fields of argument or do they vary across fields? Are these criteria used in the same way in different fields of argument or are they used differently in the various fields of inquiry? On what kind of abstract structure do the rules of inference operate? To what ends are they used?

The Rules Which Constitute Argument Vary from Field to Field

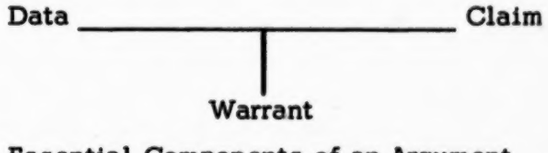
Toulmin argues for a distinction between the force of an argument and the criteria against which it is evaluated. An argument's force consists in the practical implications which attend acceptance of its claim and would include nonverbal behaviors requested by the argument's claim as well as the privilege of using that claim as information established at a recognizable level of certainty in other arguments. The force of a claim is indexed by qualifying terms such as necessary, probably, possibly, perhaps, must, etc. The criteria against which an argument is evaluated consist in those conditions which an argument must meet to merit a particular qualifying term. These "tests" of an argument express the rules which constitute argument and vary from one type of discourse to another.

Toulmin argues in Reason and Ethics (1948) and in Philosophy of Science (1953) that the various branches of inquiry (philosophy, practical ethics, the various sciences, law, etc.) each develop inference habits appropriate to the kind and quality of information available in their respective fields and related to the kinds of questions which are deemed important by investigators in those fields. The demands appropriately made of an argument offered in such a field reflect the unique inference patterns developed in that particular field of inquiry, but the practical implications of accepting an argument are much the same across fields.

The Structure of Argument Is Field Invariant

Although the rules which enable arguments vary from field to field, the various tests of arguments operate in much the same way to constitute argument. It is thus possible for Toulmin to offer an abstract characterization for the field invariant form or structure of an argument and to specify how the criteria for evaluating arguments generate this structure.

According to Toulmin, arguments proceed from some accepted piece of information (data) to some assertion of mutual interest to the contending parties (claim) via some inference-licensing assumption (warrant).

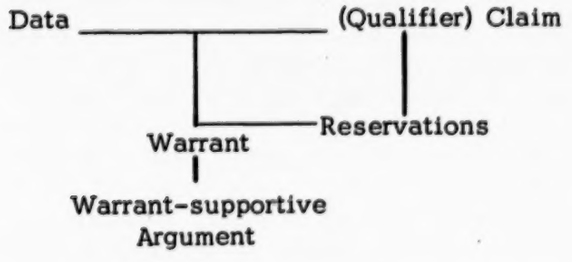


Essential Components of an Argument as Viewed by Toulmin

Data provide a mutually recognized basis for the argument accepted by virtue of immediate consensus or prior argument. Warrants license an inferential step from data to claim and are constituted by the rules of inference for the field in which the argument is advanced. Claims are questions or assertions in contention during a disagreement (actual or anticipated)—demands made upon the beliefs of one party by the assertions of another for which justification is required by the first party (recipient of the argument).

The categories of data, warrant, and claim are functional categories expressing the way in which some statements are used in arguments. The functions of data and claim are made possible by the operation of the warrant. Claims may be offered and points of agreement may be established, but those demands and bits of information do not function as parts of an argument without some implicit or explicit warranting statement.

A warrant, then, permits some claim to be established given some point of agreement, but as a statement it also expresses information, usually of a general nature. Consequently, two kinds of questions may be asked of a warrant: questions about its use as an inference license and questions about the information it expresses. Toulmin labels questions of the first order "reservations" and considers reservations to be expressions of the tests (rules) constitutive of argument. Questions of the second order (challenges to the information expressed by the warrant) are functionally the same as challenges brought against claim statements and may be answered by providing another argument which "backs" the warrant. In the Taxonomy Toulmin's term "backing" is expanded in terms of the notion "warrant-supportive argument" (for an unsympathetic analysis of this distinction see Manicas, 1966). Including qualifiers to express the force of the claim, the full Toulmin model for abstractly representing an argument is presented below.



Complete Toulmin Model for the Analysis of Argument

Arguments are Attempts to Gain Acceptance for Claims by the Provision of Justification

Toulmin suggests that arguments seek acceptance for some statements by offering other statements as justification for the contentious statements, and he defines justification in terms of satisfying mutually acknowledged rules. A claim offered by one party is said to be "justified" when the party offering the claim can provide reasons for his assertion which meet the criteria for assessing argument held by the recipient of the claim. Assuming that the parties in a dispute do not hold to capricious criteria, one justifies a claim by fulfilling the responsibilities which the relevant rules of argument place upon people who advance such claims. The relevance of a particular rule to assessing some attempted justification is determined by the conventions of the field in which the argument is advanced.

Toulmin's view of argument as rule constituted justification for claims suggests that argument is a kind of disagreement different from other varieties of disagreement (disputes, fights, boycotts, etc.) in that argument requires adherence to mutually accepted rules for generating reservations. Disputes and more violent disagreements are much like parking a car; things proceed in a happier fashion if some rules are not violated, but the event could occur even if all the rules were broken. Argument, on the other hand, breaks down when the rules are ignored or when conflicting sets of criteria are used to assess the attempts at justification offered by interested parties.

THE FIELD OF ORDINARY ARGUMENT

Since the criteria used in evaluating arguments are field dependent, attempts to implement Toulmin's general program must begin with an investigation of the field of argument in question. The notion "field of an argument" is admittedly a loose concept not amenable to simple definition, and its application to plain arguments is complicated by the fact that Toulmin's studies have been limited to the fields of science and ethics. His work, however, does indicate that the field of an argument is defined by the kind of information available, the kinds of questions considered interesting, and the shared inference patterns developed by arguers in the field. The immediate objective, then, is to analyze the field of ordinary argument along the lines suggested by Toulmin's general characterization of "field of an argument."

The Information Used in Plain Arguments

Perhaps the most distinctive characteristic of ordinary arguments is the necessary reliance of the contending parties upon secondary information (testimony) and uncontrolled, unsystematic observation. In most fields of inquiry systematic procedures can be specified for gathering information: the historian has relatively clear methods of defining what constitutes an important document and what steps must be taken to authenticate documents (Hockett, 1955); the various sciences utilize rather rigorous procedures of observation and measurement (Nagel, 1954); the law defines, with some clarity, various kinds of admissible evidence (Levi, 1948); and even philosophers will not admit casual evidence into their deliberations (Natanson, 1962). On finer points of method a great deal of disagreement may arise within any of these fields, but in all of them the search for information is conducted in a self-conscious, deliberate, and controlled fashion. In ordinary disagreements, the participants must generally rely upon the reports of specialists or upon their own observations. The layman cannot, under normal circumstances, verify (in any rigorous sense) the technical information he must use. Insofar as he systematically approaches gathering information, his "rigor" consists in careful consideration of the testimony of others.

The Questions Considered in Plain Arguments

The kinds of questions which may arise in ordinary discourse are almost unlimited. In one way or another the questions appropriate to each specialized field of argument are restricted; a specialist may refuse to pursue some questions because they are substantively irrelevant to his interests or because he is not methodologically equipped to investigate them. In everyday debates, however, empirical and evaluative questions, particular and general propositions, religious and secular problems, private and public interests, and past, present, and future issues are discussed. Any adequate analysis of the inference rules used in plain argument must posit either several kinds of inference rules each appropriate to a particular kind of question used in plain arguments, or a set of rules so general as to accommodate the wide variety of claims available.

The Inference Licenses Used in Plain Arguments

A third and more elusive characteristic of plain arguments relates to the requirement that the rules of argument must be mutually acknowledged either by tacitly accepted convention or by special prior arrangement among the participants. In the various specialized fields of inquiry the standards against which arguments succeed or fail are sufficiently conventionalized and well known to the contending parties that all the criteria relevant to a given argument are assumed to apply. If a participant fails to satisfy some criterion because he disagrees or is unfamiliar with it, the responsibility for defending his proposed alteration automatically rests with him. One immediate consequence of the highly conventionalized nature of the specialist's rules is that arguments in these fields often appear to have lost their multiparty character. That is, a participant seems to form his arguments directly in terms of the relevant rules with little reference to the attitudes other parties may have toward those rules. Since the rules completely specify the expectations of potential and actual opponents, satisfying the rules is tantamount, at least in principle, to satisfying one's opponents.

The criteria against which ordinary arguments are measured and attacked do not seem to possess this well ordered character. One need only review the variety of stances displayed in the letters to the editor printed by a relatively open newspaper to see the variety of standards against which ordinary arguments are assessed. Since the criteria utilized in plain discourse are not as well known and standardized as they are in specialized fields of argument, ordinary argument depends uniquely on the use of rules which are known to both parties. When it cannot be assumed that all the rules are known to one's opponents, it becomes important to the construction of a convincing statement that the arguments presented satisfy those criteria of interest to the opponent. Thus everyday arguments are formed against the criteria identified with some opponent and not simply against a set of abstract rules and procedures. This uniquely multiparty character of the rules used in such arguments implies that any systematic attempt to express the criteria relevant to the field of plain discourse must provide standards for assessing arguments which can be applied independent of each other and that such an attempt should provide alternative ways of making the same substantive point.

Thus three features of the field of ordinary argument should be taken into account by programs designed to clarify the structure of plain arguments: (1) the reliance on secondary information and uncontrolled observation for information; (2) the variety of question types which

may arise; and (3) the use of rules recognized and accepted by those engaging in the argument.

THE APPLICATION OF TOULMIN'S ANALYSIS OF ARGUMENT TO THE GENERATION OF TAXONOMIC CONCEPTS FOR THE FIELD OF ORDINARY DISCOURSE

Specifying the rules which operate in plain argument poses some major problems in analysis. Simple inspection of the criteria employed by "plain folks" as they assess each other's argument offers a partially, but not completely satisfactory procedure for discovering the relevant rules of argument in this field. Assuming that a consistent set of criteria apply across plain arguments, it seems apparent that such a set of rules is not uniformly well applied by disagreeing parties. Just as an inspection of the moves made by two inept chess players might reveal the rules of the game, so the rules of argument might be inferred from watching people inept at argument. And just as a much more interesting formulation of the rules of chess could be gained by examining the moves made by expert chessmen, so a more interesting discussion of the rules of argument could be formulated by observing those adept at arguing. The analogy between chess and argument breaks down however at the point of specifying how someone "adept at arguing" is to be recognized. The chess expert can be determined by competition, but what is it to win an argument? If arguments are attempts to achieve agreement using mutually agreed upon rules, one only knows when an argument is in progress if one can recognize the rules of argument. Thus any examination of arguments presupposes a knowledge of the rules which might apply.

This section of the introduction seeks to familiarize the user of the Taxonomy with the ways that Toulmin's notions were adapted to arrive at rules of argument appropriate to the field of ordinary discourse. His view of argument as a "rule constituted" activity implies that the rules of argument must be systematic and coherent as well as applicable to the field of ordinary discourse. Thus three criteria were applied in generation of the rules of argument presented in the Taxonomy: coherence, systematicity, and empirical adequacy.

Coherence

By "coherence" the researchers intend that the rules of argument be logically related and non-redundant expressions of the conditions under which assertions may be used in arguments. Assuming Toulmin's model for the field invariant features of argument, a coherent view of argument would begin by listing a basic set of assertion types which may be used as data, warrant, or claim in various arguments. A coherence requirement would then stipulate that the rules of argument express the conditions under which various combinations of these assertion types would constitute an argument with a particular force. Thus coherence demands that the Taxonomy begin by specifying the kinds of assertions which may be used as components of argument and that the rules of argument express conditions under which selected assertions may function as data, warrant, or claim.

The coherence requirement follows from the generic role rules of argument play in actual discourse. Clearly the number of situations to which the rules apply greatly exceeds the number of sets of rules; otherwise in learning rules for argument one would merely learn many features of many situations. If the rules of argument are to generate reservations relevant to a wide variety of topics, they must operate in a coherent fashion on assertion types selected from a list of assertion types.

The present Taxonomy satisfies the requirement of coherence by developing a list of argument types (sign, individual-member, member-individual, cause-effect, effect-cause, parallel case, alternative, and comparative). Each type of argument represents a unique combination of assertion types specified in terms of the kind of statement used in each functional position (data, warrant, claim) and the conditions under which the combination constitutes an argument.

Systematicity

By "systematicity" the researchers intend that the list of assertion types provide a set of mutually exclusive categories distinguished on a consistent basis of division. The requirement of systematicity follows from the observation that arguments are rule constituted acts. Rules which merely govern acts may be compiled using largely ad hoc directions, but rules which define the act itself must be expressed so that changes in one feature of the act are felt throughout. If assertion types are not unique categories they cannot be expected to reflect changes in features of the argumentative act.

The demand that assertion types be mutually exclusive categories poses an insurmountable obstacle for the project at hand if the requirement is that the categories apply to assertions apart from the structure of an argument. In some contexts a statement may assert a membership relationship; in other contexts the same statement may assert the relationship between an individual and some attribute. While the sentence remains the same in both cases, one cannot treat it as both a membership assertion and an individual attributive assertion without ignoring the surrounding context. Thus the demand for mutually exclusive categories can be met by the requirement that an assertion, once classified in relation to the other features of an argument, cannot be treated as the member of another assertion category without a corresponding alteration in the assertion-type classification or in the understanding of one of the other features of the argument. Thus the warrant of an argument taken as an assertion of Type A and said to link data of a Type B assertion and claim of a Type C assertion cannot be reclassified as a Type D assertion without corresponding changes in the classification of the data or the claim.

Empirical Adequacy

By empirical adequacy the researchers mean the ability of the taxonomic concepts developed to cope with the unique requirements of the field of ordinary discourse. This requirement, then, would demand that adequate theoretical attention be devoted to the use of testimony in ordinary argument, the varieties of claims presented in this field, and the independence of the reservations appropriate in this field.

The empirical requirements of the field of ordinary discourse demand that the Taxonomy account for the rules applied to the assessment of expert and lay testimony. Yet, it is readily apparent that the classification of assertion types and the array of reservations corresponding to argument patterns cannot be stretched to accommodate justification based on testimony. Other attempts to apply Toulmin to plain arguments have urged the recognition of a distinct warrant type for arguments based on testimony (Brockriede & Ehninger, 1960 & 1963). This suggestion assumes that the credentials of the expert license an inference in much the same way as causal, sign, comparative, classification, alternative, and parallel case warrants and that "tests of authority" apply to the expert's credentials in much the same way as reservations to a warrant. While the expert's qualifications do provide a basis for accepting his statements, it is difficult to see that an inference, in Toulmin's sense of the word, is licensed by the testifier's credentials. An inference involves the acceptance of some statement on the basis of some already accepted statement and some principle of reasoning used in keeping with relevant rules. Even a loose interpretation of "inference" does not comfortably accommodate acts of testifying in which (1) no statements are accepted independent of the authority's qualifications, (2) the authority's qualifications do not resemble those statements which normally count as "principles of reasoning," and (3) the assertions presented in the claims are precisely those presented in the data.

In another sense, testimony can be treated as a special case of individual-to-class reasoning with data: these statements were made by M/ warrant: statements made by M may usually be taken as members of the class of acceptable statements/ claim: these statements are members of the class of acceptable statements. On this interpretation, the authority's credentials would be part of the warrant establishing argument. A similar operation, however, could be carried out as a final stage in all arguments involving reasons—i.e., data: good reasons have been given for these statements/ warrant: statements for which good reasons have been given may be taken as members of the class of acceptable statements/ claim: these statements are acceptable. The interpretation of both testimony and reasons along these lines violates the notion of acceptability implicit in Toulmin's work. Acceptance is not taken as an abstract recognition of class membership, but as a willingness to use the statements accepted as the basis for developing other arguments or as the basis for non-linguistic acts. Thus, while such an analysis of testimony is analytically possible, it is not motivated by the way the criteria for assessing testimony are used in an argument.

A more convincing analysis of testimony can be provided if testifying is interpreted as a kind of linguistic justificatory act distinct from reasoning and constituted by the rules for assessing testimony. Such rules would apply directly to the qualifications of a person attempting the performance, and satisfaction of the rules would justify acceptance of his statements. This approach is taken in the Taxonomy.

The tests of authority presented in the Taxonomy are derived from the role testimony must play in ordinary argument. If testimony is to provide an accurate and reliable bridge between

ordinary discourse and specialized discourse, persons cited as experts must actually be experts (qualified to judge) and be expert in ways related to the statements offered (position to observe and competent to observe). Furthermore, an expert's testimony is not introduced simply as the statements of a "great" man but as a statement of findings in a relevant technical field. Full assessment of an authority's ability to speak for a technical field would require full mastery of that field, but important consistency, proximity, recency, and bias criteria may be and often are applied as indicators of the authority's relationship to the field in question. Thus the tests of authority were constructed primarily on the empirical nature of the field of ordinary discourse and organized in terms of the requirements of coherence and systematicity.

Special attention was not given to the commonly recognized distinctions between lay and expert testimony. In many respects the distinction is not trivial, but differences in these two types of testimony do not motivate distinct rule lists. Lay reports are adequate where the observations in question can be made without special training, hence certain "authority" criteria (qualified to judge) are not relevant to lay witnesses. However, the other tests of authority apply as implications of reportive acts. Position to observe and physical competence to observe are implied by the presentation of statements as reports of observations; consistency, bias, proximity, and recency checks are implied by the presentation of statements as complete or full reports. Since two distinct sets of criteria are not required to assess acts of testimony offered as justification, the Taxonomy presents a unified discussion of the rules constitutive of testimony.

The nature of the field of ordinary argument requires that the Taxonomy account for the wide variety of claims asserted in plain debates. The list of assertion types (attributive, membership, indicative, responsibility, and comparative) presented in the Taxonomy was developed to meet this requirement. The empirical adequacy of the proposed classification can only be determined by considering possible counter-examples. A fully developed defense along such lines cannot be presented here; however, the proposed system can be compared with similarly motivated attempts to classify assertions as propositions of fact, propositions of value, and propositions of policy. This comparison constitutes a particularly appropriate test of the proposed scheme because the alternative is widely used by argumentation theorists (Freeley, 1961) and because its distinctions are usually said to mark fundamental differences in proof requirements (Hare, 1952).

That there are important distinctions between statements of fact, value, and policy is not in doubt; however, whether those categories mark distinctions which cannot be handled by the proposed system and which are relevant to theories of argument is questionable. In this regard it should be noted that propositions of value and propositions of policy do not introduce sets of sentences which cannot be analyzed by the system included in this Taxonomy. Evaluative propositions of the sort "X is good" can be analyzed as membership assertions which place X in the category of things considered "good," and policy propositions of the sort "X should be done" can be analyzed in a similar fashion as classifying X in the category of things which "should be done." Thus propositions of fact, value, and policy can be analyzed according to the assertion-type schedule presented in the Taxonomy.

It remains to be seen whether analyzing value propositions and policy propositions according to the assertion types presented in the Taxonomy sacrifices information necessary to a full understanding of argument. The categories of fact, value, and policy are often said to be based on radical differences among the referents which their respective terms designate. The words in a proposition of fact are said to refer to observable and objective entities; the terms in a proposition of value are thought to refer to unobservable and subjective states; and the terms of propositions of policy are said to designate courses of action. Insofar as the fact, value, policy distinctions are based on supposed differences in referents, they are the product of a generally inadequate theory of meaning and have been shown to provide a misleading basis for the analysis of linguistic acts (Nowell-Smith, 1954).

These categories are sometimes defended as marking different sets of proof requirements. Propositions of fact are said to be amenable to substantive proof; propositions of value are taken to require some appeal to what is considered good by the recipients of the argument; and propositions of policy are thought to require a demonstration that the proposed policy satisfies the values of the audience. This approach adds little interesting information which is not conveyed by the requirement that arguments be constructed using rules held by the recipient of the arguments. No theory of argument can enumerate all the things parties to arguments might consider "good," nor is there any more reason

to require an enumeration of the topics of evaluative arguments than there is reason to require an examination of the topics which might arise in political arguments. A theory of argument can only specify the rules of argument in an abstract form and notice that these rules must be applied as they are jointly held by the participants. This latter requirement applies to factual propositions as well as to policy and evaluative assertions.

Were there substantial differences in the inferential use of statements following the distinction pointed to by these three categories, they would be of interest to the present inquiry; however, Toulmin has shown that questions about what is desirable and right use rules of inference which function in the same way as the rules which apply to questions of what is and what can be truly inferred (1948). Since the rules appropriate to evaluative inferences can be formulated in the same way as the rules related to other inferences and since little important information is lost in so formulating them, the list of assertion types presented in the Taxonomy seems to accommodate the important functions of its most radical alternative.

The empirical requirements of the field of ordinary discourse demand that the rules of argument be applicable independent of each other. Since the rules of argument are embodied in the sets of reservations appropriate to each kind of argument (sign, individual-member, member-individual, cause-effect, effect-cause, parallel case, alternative, and comparative), this requirement demands that the application of any particular reservation not depend upon the use of any other reservation. The construction of the Taxonomy insured such independence of reservations by defining each reservation without reference to any other reservation. Reservations are defined in terms of the kind of argument to which they apply. Thus the application of any particular reservation depends upon a recognition of the kind of argument at hand, not upon the other reservations which may or may not have been raised.

SUMMARY

This introduction has attempted to outline the central assumptions on which the Taxonomy is based and to indicate the ways in which taxonomic concepts were derived from those assumptions. It has not attempted a complete justification of the assumptions or methods utilized; rather it has sought to familiarize users of the Taxonomy with the view of argument which led to the formulation of the accompanying Taxonomy. In short, this "view of argument" is derived from Toulmin's presentation of inference as a rule-constituted activity and from the nature of the field of ordinary discourse and is applied to the Taxonomy in terms of the requirements of systematicity, coherence, and empirical adequacy. In this light, argument is seen as an activity made possible by the participants' implicit or explicit acceptance of rules of inference—by their mutual agreement on what kinds of reservations must be satisfied to establish forceful claims.

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II

WORKING DEFINITIONS AND TAXONOMY FORMAT

Before moving to the Taxonomy proper, the meanings of central terms will be examined. A description of the schema of the Taxonomy will then be presented to orient the reader to the materials which are to follow.

WORKING DEFINITIONS

In approaching "A Taxonomy of Concepts and Critical Abilities Related to the Evaluation of Verbal Arguments," three terms need definition: Concepts, Critical Abilities, and Evaluation of Verbal Arguments.

Concepts — A concept is a set of attributes which defines a unit of knowledge (i.e., term, class, event, object, etc.) and distinguishes it from other units of knowledge. Concepts are commonly symbolized by verbal labels having particular networks of mental associations. As concepts may be considered to be hierarchical, with concepts on one level involving concepts on a lower or more basic level of knowledge, most of the material presented in this Taxonomy may be viewed as higher-order concepts which assume a mastery of such lower-order concepts as grammatical form class, sentence structure, and punctuation.

Critical Abilities — A critical ability is a skill or proficiency which involves the application of concepts (principles or standards) to newly encountered situations. Critical abilities are to be distinguished from such creative abilities as constructing, organizing, or synthesizing a unique entity. Critical abilities are also to be distinguished from such problem-solving abilities as locating, defining, or hypothesizing with respect to perceived difficulties.

Evaluation of Verbal Arguments — The evaluation of verbal arguments is the process of applying higher-order concepts (i.e., rules or principles concerning the nature, structure, and tests of argument) to arguments occurring in ordinary verbal discourse in order to assess their acceptability. Such an evaluation requires that one understand numerous concepts and employ diverse critical abilities.

TAXONOMY FORMAT

The materials of the Taxonomy are organized under four headings: Concept Cluster, Critical Ability, Term, and Concept Embraced by Term.

Concept Cluster — The major divisions or units of material are identified as a cluster of related concepts. The clusters of concepts are presented as a linear progression from basic discriminations to finer distinctions; i.e., subsequent clusters are dependent upon understandings embodied in prior clusters.

Critical Ability — The critical abilities relevant to particular concept clusters are specified. These phrases represent generalized skills which a student may perfect through the repeated application of the concepts to argumentative instances.

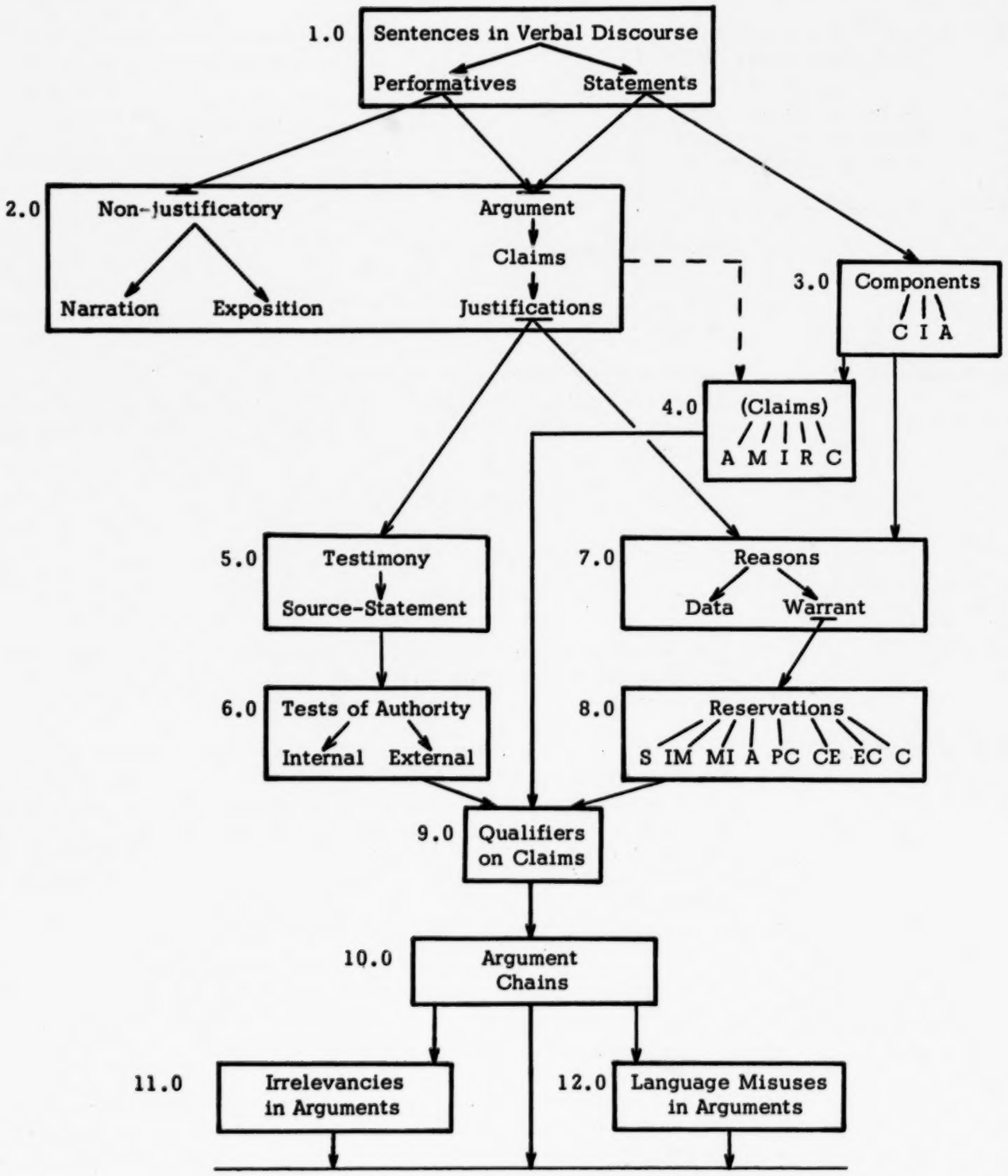
Term — Labels or names are assigned to the specific concepts which are

contained in the concept cluster. The terms designate varying levels of concepts, some being subordinate to others. Such subordination is expressed in the Taxonomy through indentation and numerical designation.

Concept Embraced by Term

The defining attributes and relationships necessary to understanding the concepts are presented. Examples from ordinary discourse and structural diagrams are included to facilitate understanding of the concepts.

The organizational pattern below presents a schematic interrelationship of the Concept Clusters in the Taxonomy.



III
THE TAXONOMY

CONCEPT CLUSTER	CRITICAL ABILITY
1. Concepts related to the functions of sentences in verbal discourse	Distinguishing between sentences functioning as statements and sentences functioning as performatives

TERM	CONCEPT EMBRACED BY TERM
	Sentences in verbal discourse may function as statements or performatives.
1.1 Statements	Statements are sentences which may be affirmed or denied; i.e., a listener or reader may respond "I agree" or "I disagree" or some paraphrase of these responses. For example, consider the following sentences: "George is 32 years old." "Alfie is a better movie than Funeral in Berlin." "The United States should discontinue all nuclear testing." In each instance, the recipient of the statement may respond by agreeing or disagreeing with its assertive content. Thus, each of these sentences may be perceived as a statement.
1.2 Performatives	Performatives are sentences which are not taken as calling for affirmation or denial; performatives are acts committed by the speaker or writer (promising, defining, identifying, describing, swearing, begging, questioning, exclaiming, giving, ordering, etc.). To affirm or deny that the speaker has performed the act just completed would be an inappropriate response. For example, consider the following sentences: "How are you feeling today?" "Close the door." "I promise to return in ten minutes." In each instance, an expression of agreement or disagreement on the part of the recipient would be inappropriate since the acts of questioning, ordering, and promising have already been committed.

Often a sentence may be taken either as a performative or a statement. For example, while the sentence "Did you know that NBC is televising the Rose Bowl game?" may be reacted to as a question (the performative "Did you know"), it may also be reacted to in terms of its assertive content (the statement "NBC is televising the Rose Bowl game"). For another example, the sentence "That is a Christmas tree" may be taken as a statement, the assertive content of which is in question, or it may be taken as a performative involving the act of labeling or identifying.

CONCEPT CLUSTER	CRITICAL ABILITY
2. Concepts related to the forms of verbal discourse	Distinguishing arguments from other forms of verbal discourse

TERM	CONCEPT EMBRACED BY TERM
	For the purpose of this Taxonomy, all discourse may be viewed as either argumentative or non-justificatory.
2.1 Argument	An argument is a series of sentences (at least one of which is taken as a statement) in which one or more sentences (justifications—performatives or statements) are seen as presenting cause(s) for accepting other sentences (claims—statements).
2.1.1 Claims	Claims are statements in arguments for which justifications (inducements to agreement) are perceived as necessary. Any statement in discourse may function as a claim in an argument if through choice or challenge its initiator attempts to provide justifications in its behalf.
2.1.2 Justifications	Justifications are sentences which are seen as inducements to agreement on claims. Justifications may be adequate or inadequate depending upon whether the person advancing the justifications can satisfy the obligations defined by the criteria for evaluating arguments used in the particular field in which the argument is advanced. Justifications in ordinary argument are of two types, testimony and reasons.
2.2 Non-justificatory Discourse	Non-justificatory discourse is a series of sentences taken as performatives which are arranged in a meaningful pattern. Argument may be contrasted with two popular forms of non-justificatory discourse, narration and exposition.
2.2.1 Narration	Narration is a series of sentences (taken as performatives) which present a temporal sequence of events.
2.2.2 Exposition	Exposition is a series of sentences (taken as performatives) which describe or relate characteristics of objects, events, etc.

CONCEPT CLUSTER	CRITICAL ABILITY
3. Concepts related to the components which are related in statements	Recognizing the components which are related in statements

TERM	CONCEPT EMBRACED BY TERM
	All statements consist of asserted relationships between persons, events, objects, places, institutions, characteristics, values, occasions, etc. When dissecting statements it is sufficient to consider three broad groupings of components: Classes, Individuals, and Attributes.
3.1 Classes	Classes are groups of discriminably different things (individuals) rendered equivalent on the basis of mediating attributes and responded to in terms of their class membership rather than their uniqueness.
3.2 Individuals	Individuals are persons, events, objects, or classes considered in terms of their uniqueness. An individual is potentially a member of many different classes.
3.3 Attributes	Attributes are discriminable features of an individual or a class which may be or are held in common with other individuals or classes. Attributes are features which may or do serve as the basis for a categorizing response.

CONCEPT CLUSTER	CRITICAL ABILITY
4. Concepts related to the nature of statements functioning as claims in arguments	Recognizing types of claims in arguments

TERM	CONCEPT EMBRACED BY TERM
(Claims)	Since a statement is subject to affirmation or denial, it may be seen as making a claim for which justificatory sentences are necessary. The following types of claims reflect the kinds of arguments advanced in ordinary discourse.
4.1 Attributive Claims	Attributive claims assert relationships of classes or individuals to attributes; thus the orders of attributive claims are class-attribute and individual-attribute.
4.1.1 Class-Attribute Claims	Claims relating a class to an attribute (C_1—A_1):
	"The Christian religion offers an honest way of life." (Formally: The class of religions properly called Christian has the attribute of offering an honest way of life.)
	"Scientists attempt to broaden man's knowledge." (Formally: The class of men properly called scientists has the attribute of attempting to broaden man's knowledge.)

4.1.2 Individual-Attribute Claims

Claims relating an individual to an attribute (I_1—A_1):

"The church down the street offers an honest way of life." (Formally: The church down the street has the attribute of offering an honest way of life, where church is not indexed by class membership but by a simple locating attribute.)

"Arthur Burns attempts to broaden man's knowledge." (Formally: Arthur Burns has the attribute of attempting to broaden man's knowledge, where Arthur Burns is seen without reference to class membership.)

4.2 Membership Claims

Membership claims assert that classes or individuals are members of a particular class; thus the orders of membership claims are class-class and individual-class claims.

4.2.1 Class-Class Claims

Claims asserting that one class is a member of another class (C_1—C_2):

"The Methodist church is a Christian church." (Formally: The class of churches properly called Methodist churches is a member of the class of churches properly called Christian churches.)

"Biology is a science." (Formally: The class of activities properly called biology is a member of the class of activities properly called science.)

4.2.2 Individual-Class Claims

Claims asserting that an individual is a member of a particular class (I_1—C_1):

"The church down the street is a Methodist church." (Formally: The particular church down the street is a member of the class of churches properly called Methodist churches.)

"Arthur Burns is a scientist." (The individual properly called Arthur Burns is a member of the class of people properly called scientists.)

4.3 Indicative Claims

Indicative claims assert that the presence of one attribute indicates (or reveals or suggests) the presence of another attribute (A_1—A_2).

"An honest way of life indicates a sound moral philosophy." (Formally: The attribute of an honest way of life is a sign of the attribute of a sound moral philosophy.)

"Attempting to broaden man's knowledge reveals a dedication to worthy social goals." (Formally: The attribute of attempting to broaden man's knowledge is associated with the attribute of dedication to worthy social goals.)

4.4 Responsibility Claims

Responsibility claims assert that the occurrence of one event necessitates the occurrence of another event (I_1—I_2).

"Heavy rains cause flooding." (Formally: The event heavy rains is responsible for the event flooding.)

"The Rock River overflowing its banks is a result of heavy rains." (Formally: The event Rock River overflowing its banks is the product of the event heavy rains.)

4.5 Comparative Claims

Comparative claims assert the relative position of two individuals or classes in terms of some attribute of both (e.g., quantity, direction, etc. A_1 of $I_1 \geq A_1$ of I_2).

"There are more Boy Scouts in our school than Girl Scouts."

"George is the same height as Sam."

"Each of the bowlers on the 'Woodchicks' team is better than any of the bowlers on the 'Tenpins' team."

"Math is easier than history."

"The Bryon Building is north of Hal's Restaurant."

CONCEPT CLUSTER	CRITICAL ABILITY
5. Concepts related to the justification of claims through testimony	Recognizing testimony offered as justification

TERM	CONCEPT EMBRACED BY TERM
(Testimony)	Testimony consists of a source issuing statements which are accepted or rejected by virtue of the recipient's appraisal of the source against a set of rules (i.e., tests of authority). The concept "testimony" parallels the concept "reasons" in two respects: testimony may be offered as justification for a claim, and the use of testimony is governed by a set of rules. For example, if one advances the claim "It's going to rain today," the recipient may ask for justification ("How do you know?"). Then, one might respond with an instance of testimony such as "Because the TV weatherman said so." The acceptability of such testimony as justification for the claim may then be determined by application of relevant criteria (tests of authority).

CONCEPT CLUSTER	CRITICAL ABILITY
6. Concepts related to the tests of claims justified through testimony	Appraising testimony in terms of internal and external criteria

TERM	CONCEPT EMBRACED BY TERM
(Tests of Authority)	Testifying, like questioning or ordering, may be viewed as an act or performance. When viewed in this way, it is appropriate for the recipient to respond to the act by questioning the source's capacity to engage in the act; i.e., the recipient determines his acceptance or rejection of the statement (claim) by judging whether the source meets certain rules which govern the issuing of the statement.
6.1 Internal Tests of Authority	Internal tests appraise the source (the person performing the act of testifying) in relation to the nature of his statement. The common internal tests of authority examine whether the source is in a position to observe, is competent to observe, is unbiased toward the topic, and/or is qualified to judge.

6.1.1 Position to Observe

In order to report observations, the witness must have been in a position to observe the phenomenon reported or have had access to comprehensive reliable reports of the phenomenon.

Has the Time reporter seen government contracts indicating that the Panama Canal will be rebuilt?

Was the court reporter in the courtroom at the time the verdict was announced?

6.1.2 Competent to Observe

In order to report observations of a phenomenon, an authority must be physically able to observe and must have any training necessary to the observation.

Did the Time reporter have the eyesight necessary to distinguish the two ships from each other at that distance?

Did the interviewer have the training necessary to survey American attitudes toward the space program?

6.1.3 Unbiased on Topic

In order to report observations objectively and accurately, the reporter must be relatively free of bias or concern for personal benefit and willing to report his observations completely.

Was the witness a friend of the defendant?

Do statements of American steamship companies reflect a bias in favor of government support for the canal?

6.1.4 Qualified to Judge

In order to draw inferences from the phenomenon observed, to evaluate it, or to relate its occurrence to other phenomena, experience and training are required in the areas of knowledge under consideration.

Can Professor Jones, an expert in school finance, speak with authority about the problems related to supporting a second canal?

Did the Time reporter, trained to observe courtroom procedure, have the experience necessary to generalize about courtrooms he has not observed or about the problems of criminal law in general?

6.2 External Tests of Authority

External tests appraise the source (the person performing the act of testifying) by viewing his statement in relation to other statements. The common external tests of authority examine whether a source is consistent with himself, is consistent with others, offers more recent statements than others, and/or is closer to the phenomenon being reported.

6.2.1 Intra-Source Consistency

In order for a source's statement to be acceptable, it should be consistent with his prior statements. Unless an inconsistency can be explained in terms of changes in the authority's position to observe, competence to observe, etc. or in terms of distortions which arise from quoting the source out of context, inconsistent reports from the same authority indicate poor reliability.

Was John Foster Dulles always opposed to the admission of Red China to the U.N.? If not, why not?

Did the testimony given by the witness in cross-examination contradict his original testimony?

6.2.2 Inter-Source Consistency

In order for a source's statement to be acceptable, it should be consistent with the statements of other authorities in the field, unless the authority in question is better trained, in a better position to observe, less biased, etc. than other sources of information.

Do the witnesses present at the scene of the crime agree in the report of the events alleged to have occurred?

Do other experts agree with Justice Colburn's interpretation of the Constitution?

6.2.3 Recency

In order for a source's statement to be acceptable, it should be (or should agree with) the most recent statement available relevant to the phenomenon in question, unless there is reason to believe that the phenomenon has not changed through time.

Do the more recent descriptions of canal traffic indicate that a 1952 report of shipping in the Panama Canal Zone is inaccurate with reference to present traffic?

Has inflation changed the cost of constructing a new canal so as to render invalid a 1949 estimate of the cost of a new canal?

6.2.4 Proximity

In order for a source's statement to be acceptable, it should be based on direct access to information on the topic. Testimony from primary sources should be preferred to statements provided by secondary sources or those with indirect access to data on the topic.

Do the court recorder's documents render more reliable information on the Scopes "monkey" trial than an editor's summary of newspaper accounts of the trial?

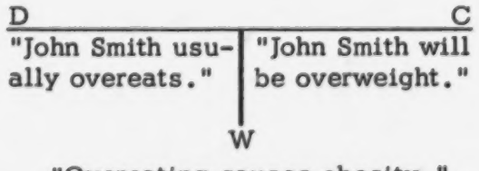
Did the NFO president conduct a survey of small farmers or are his statements based on the results of a separate polling agency?

CONCEPT CLUSTER	CRITICAL ABILITY
7. Concepts related to the justification of claims through reasons	Recognizing reasons offered as justification; classifying reasons by argumentative function; detecting arguments in which relational statements are suppressed

TERM

CONCEPT EMBRACED BY TERM

Reasons in arguments serve two essential functions: to provide the data for a claim, and to provide a warrant statement whereby one moves from data to claim. The relationship between reasons in an argument may be visualized in the following manner:



7.1 Data

Data are part of the ground from which claims are produced. Both parties to the argument must agree to the assertive content of a statement in order for it to function as data. Of course, statements offered as data may be challenged, but, in the event of an objection to the data, it becomes a claim and the focus of another argument. Since data are potential claims, the patterns of data statements correspond to the patterns of claim statements.

In popular discourse, data for a claim are frequently volunteered by the initiator of the claim, for example:

> "The people in River City have not been attending the Stars' baseball game; the Stars will probably be moving to another city."

In other instances the data for claims are given in response to questions advanced by the recipient of the claim.

> "Another canal across Central America is needed."
>
> "Why?"
>
> "Because the Panama Canal cannot accommodate many of the new, large ships sailing from the Atlantic to the Pacific."

7.2 Warrant

Warrants constitute the remaining ground from which claims are produced. Like data, the assertive content of warrants must be agreed to by the parties to the argument. However, warrant statements (unlike data statements) provide a basis for moving from one statement (data) to another statement (claim) when the warrant statements are used in accordance with certain rules of inference. While a warrant may be expressed for each argument in which the data is relevant to the claim, the warrant is not always explicit in the presentation of the argument; e.g., the arguments advanced under 7.1 above had no warrant given. With warrants explicitly stated, those arguments become:

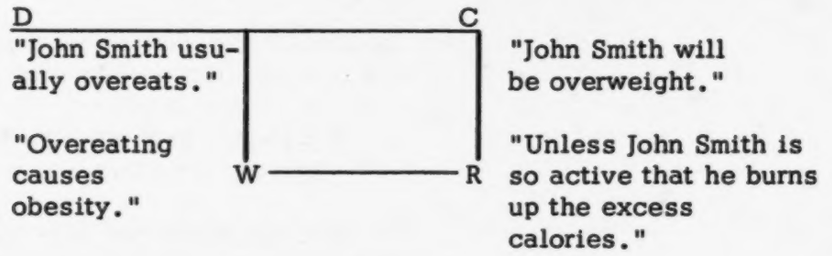
> "The people in River City have not been attending the Stars' baseball games. Since low attendance at baseball games causes a team to move to another city, the Stars will probably be moving to another city."
>
> "The Panama Canal cannot accommodate many of the new, large ships sailing from the Atlantic to the Pacific. Since the insufficiency of a canal to handle present day traffic indicates a need for additional canals, another canal across Central America is needed."

CONCEPT CLUSTER	CRITICAL ABILITY
8. Concepts related to the tests of claims justified through reasons	Recognizing various patterns of reasoning; supplying appropriate warrants to relate data to claim; appraising reasons according to relevant rules of inference

TERM	CONCEPT EMBRACED BY TERM
(Reservations)	The criteria for assessing claims justified by reasons may be expressed through reservations. Reservations are questions embodying the rules

of inference for a particular reasoning pattern. Reservations always accept the assertive content of the warrant but question its use to link a particular piece of data to a particular claim.

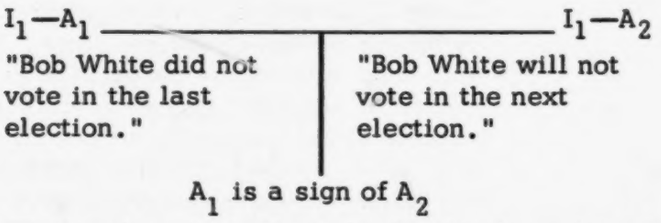
The relationship of reservations to data, warrants, and claims may be visualized in the following manner:



Since the rules of inference differ from one reasoning pattern to another, the reservations which follow will be presented under a description of the particular pattern to which they are relevant.

8.1 Sign reasoning

The warrant in sign reasoning asserts that Attribute 1 indicates that Attribute 2 will occur (is occurring or has occurred). The data in sign reasoning assigns Attribute 1 to an individual "I," and the claim asserts that Attribute 2 may be assigned to the same individual.

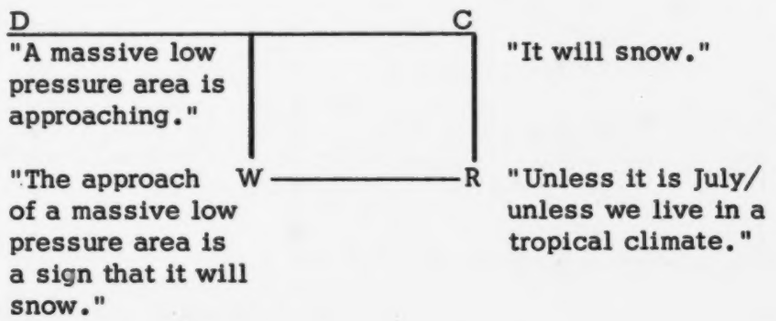

I_1—A_1
I_1—A_2
"Bob White did not vote in the last election."
"Bob White will not vote in the next election."
A_1 is a sign of A_2
"Failure to vote in the last election is a sign of voting failure in the next election."

8.1.1 Reservations to Sign Reasoning

Reservations to sign reasoning stipulate that in this instance (the particular relationship under discussion) the data is not symptomatic of the claim; however, the sign relationship expressed in the warrant may be a legitimate one in other cases.

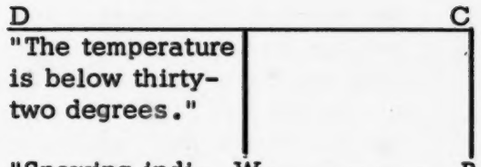
8.1.1.1 Disrupted Sign

Reservations of this variety stipulate conditions such as time and location which may interfere with the operation of the sign relationship in the instance considered.


D
C
"A massive low pressure area is approaching."
"It will snow."
"The approach of a massive low pressure area is a sign that it will snow."
W
R
"Unless it is July/ unless we live in a tropical climate."

8.1.1.2 Non-Reciprocal Sign

Reservations of this variety stipulate that A_1 is not a sign of A_2, although A_2 may be a sign of A_1.



"The temperature is below thirty-two degrees."

"It is snowing."

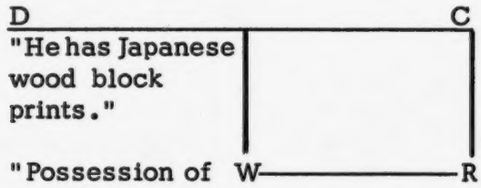
"Snowing indicates the temperature is below thirty-two degrees."

W——R

"Unless low temperature does not always signify the presence of snow."

8.1.1.3 Alternate Sign

This type of reservation asserts that a simpler and more frequently occurring explanation may be provided, although in some cases the more complicated relationship may hold.



"He has Japanese wood block prints."

"He has been to Japan."

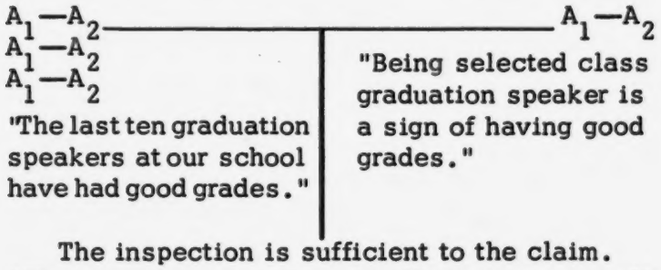
"Possession of Japanese wood block prints is a sign of having been to Japan."

W——R

"Unless the bookstore has a sale on wood block prints."

8.1.2 Sign-Supportive Reasoning

When the assertive content of a sign warrant is challenged, it may be established by an inductive argument based on an inspection of the joint occurrence of the attributes in question. The warrant in such an argument asserts that the examination provides a sufficient basis for generalization. (It should be noted that challenges to all types of warrants may be met by means other than inductive arguments; i.e., argument from testimony or argument by one of the reasoning patterns.)



"The last ten graduation speakers at our school have had good grades."

"Being selected class graduation speaker is a sign of having good grades."

The inspection is sufficient to the claim.

"These past instances are sufficient to generalize to graduation speakers."

8.1.3 Reservations to Sign-Supportive Reasoning

Reservations to sign-supportive reasoning stipulate ways in which the inspection of instances has not been sufficient to establish the challenged warrant.

8.1.3.1 Atypical Instances

Reservations of this variety question the context in which the joint occurrences of A_1 and A_2 were observed and may limit the claim to the peculiar circumstances in which the relationship was examined.

8.1.3.2 Equivocal Instances

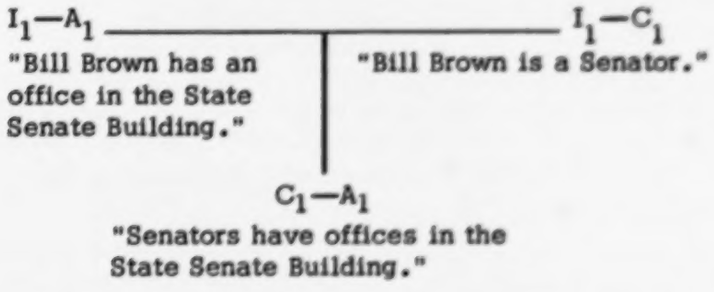
Reservations of this variety question whether the A_1's and A_2's examined as data were all of the same kind.

8.1.3.3 Insufficient Instances (Hasty generalization)

Reservations of this sort stipulate that too few instances of the juncture of A_1 and A_2 were observed to preclude attributing their joint occurrence to chance alone.

8.2 Individual-to-Member Reasoning

The warrant in individual-to-member reasoning asserts that the possession of A_1 (or Attributes A_1, A_2, A_3, etc.) identifies an individual as a member of Class C_1. The data in individual-to-member reasoning relates an attribute to an individual. The claim consists of a membership assertion. (Note: This is not the traditional Individual-to-Class inductive argument.)

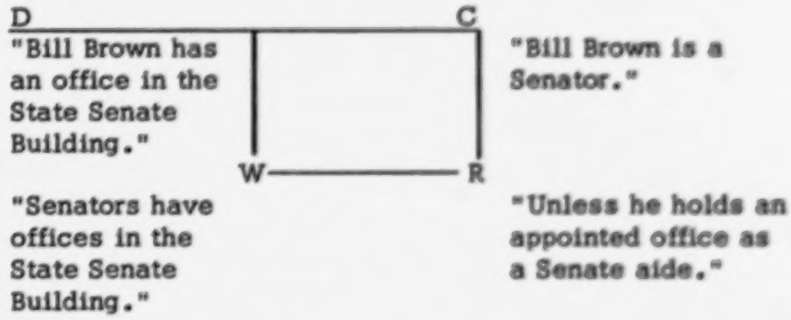

I1—A1
"Bill Brown has an office in the State Senate Building."
I1—C1
"Bill Brown is a Senator."
C1—A1
"Senators have offices in the State Senate Building."

8.2.1 Reservations to Individual-to-Member Reasoning

Reservations to individual-to-member reasoning stipulate that an alternative classification is more reasonable or that the membership characterization presented in the warrant does not pertain to the particular individual under discussion.

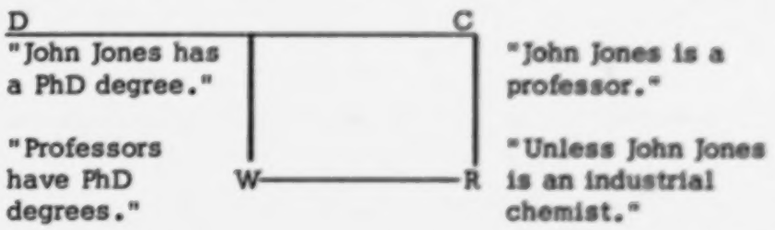
8.2.1.1 Conflicting Attributes

Reservations of this variety stipulate that the individual cited in the claim has other attributes which conflict with his alleged membership in the class.


D
C
"Bill Brown has an office in the State Senate Building."
"Bill Brown is a Senator."
W
R
"Senators have offices in the State Senate Building."
"Unless he holds an appointed office as a Senate aide."

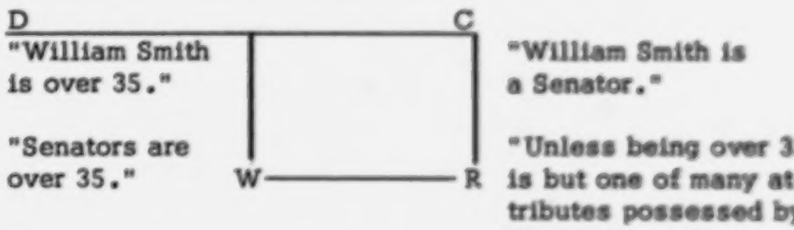
8.2.1.2 Special Membership

Reservations of this variety stipulate that although the individual of the claim is a member of the class, he is more properly considered as the member of a special subclass of the class.



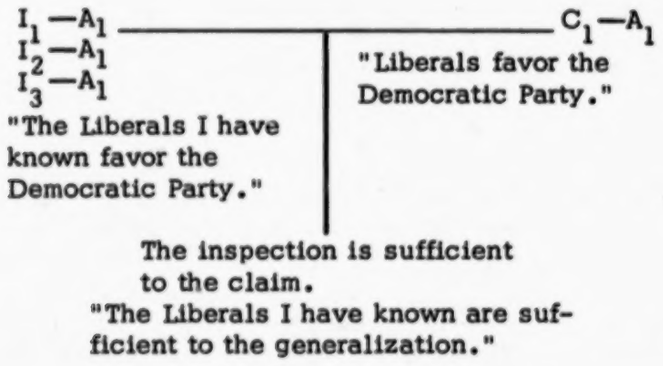
8.2.1.3 Partial Identification

Reservations of this variety stipulate that although members of C_1 have Attribute A_1, the possession of A_1 is not sufficient to identify an individual as a member of C_1.



8.2.2 Class-Supportive Reasoning

The assertive content of the warrant in individual-to-member reasoning may be challenged and when challenged may be supported by an appeal to an inductive argument based on an inspection of the class in question.


I_1—A_1
I_2—A_1
I_3—A_1
"The Liberals I have known favor the Democratic Party."
C_1—A_1
"Liberals favor the Democratic Party."
The inspection is sufficient to the claim.
"The Liberals I have known are sufficient to the generalization."

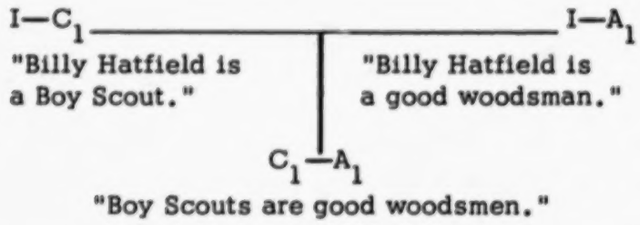
8.2.3 Reservations to Class-Supportive Reasoning

The reservations which were applied to sign-supportive reasoning may be applied to class-supportive reasoning also.

Atypical instances stipulate that the members of Class C_1 were examined in circumstances so unusual that the characteristics attributed to them cannot be normally expected to pertain, or that the instances examined compose only a special subclass of Class C_1 and thus the Attribute A_1 may only be predicated of that subclass. Equivocal instances question whether the A_1's examined are really the same attribute. Insufficient instances stipulate that the number of instances of C_1 examined was not sufficient to preclude the possibility of Attribute A_1 occurring among the members examined on the basis of chance alone.

8.3 Member-to-Individual Reasoning

The warrant in member-to-individual reasoning asserts that members of Class C_1 possess Attribute A_1. The data in member-to-individual reasoning present an individual or class as a member of Class C_1. The claim asserts a relationship between the individual of the data and A_1.

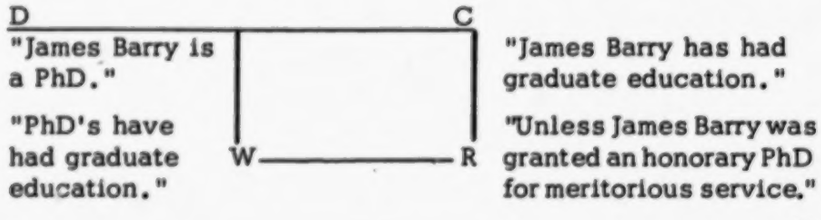


8.3.1 Reservations to Member-to-Individual Reasoning

Reservations to member-to-individual reasoning stipulate I's membership in C_1 may be of a sort which does not permit predicating A_1 of I.

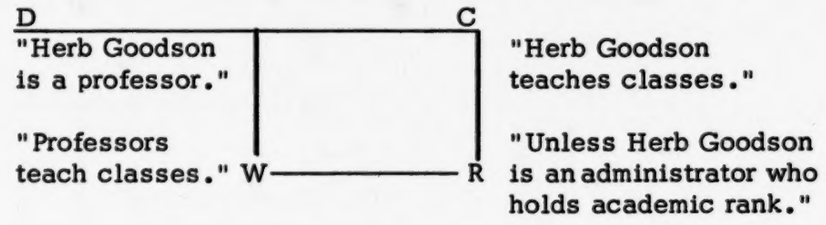
8.3.1.1 Unusual Circumstances

Reservations of this sort stipulate that C_1 possesses A_1 under certain circumstances which do not pertain to I or only pertain to I in a highly limited fashion.



8.3.1.2 Special Membership

Reservations of this sort stipulate that I is a member of a special subclass of C_1, the members of which do not possess A_1.



8.3.2 Class-Supportive Reasoning

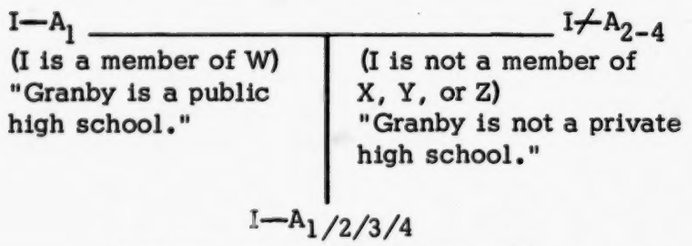
The assertive content of the warrant in member-to-individual reasoning may be challenged and when challenged may be established by the same moves used for an individual-to-member warrant.

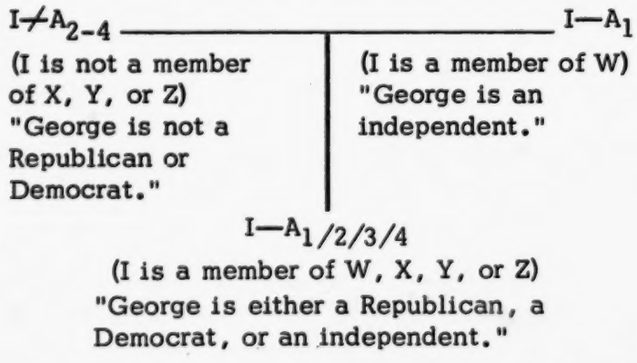
8.3.3 Reservations to Class-Supportive Reasoning

Since warrants for member-to-individual reasoning are the same as warrants for individual-to-member reasoning, and since the warrants when challenged require the same justificatory moves, the reservations to class-supportive reasoning in defense of warrants in member-to-individual reasoning are the same as those presented under 8.2.3 above.

8.4 Alternate Reasoning

The warrant in alternative reasoning presents a disjunction of attributes (or classes) which an individual or class may have (or into which they may be placed). The data affirm a relationship between an individual (or class) and a class or an attribute, or the data deny a relationship between an individual (or class) and one or more of the attributes or classes exhibited in the warrant. The claim expresses a converse relationship between the individual (or class) and the remaining attributes or classes exhibited in the warrant.


I—A1
I≠A2-4
(I is a member of W)
"Granby is a public high school."
(I is not a member of X, Y, or Z)
"Granby is not a private high school."
I—A1/2/3/4
(I is a member of W, X, Y, or Z)
"Granby is either a public or a private high school."

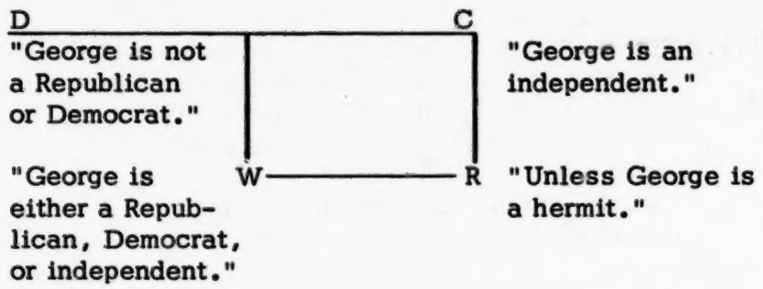

I≠A2-4
I—A1
(I is not a member of X, Y, or Z)
"George is not a Republican or Democrat."
(I is a member of W)
"George is an independent."
I—A1/2/3/4
(I is a member of W, X, Y, or Z)
"George is either a Republican, a Democrat, or an independent."

8.4.1 Reservations to Alternative Reasoning

Reservations to alternative reasoning stipulate that the categories presented in the warrant are either irrelevant to I or are negated through equivocal usage.

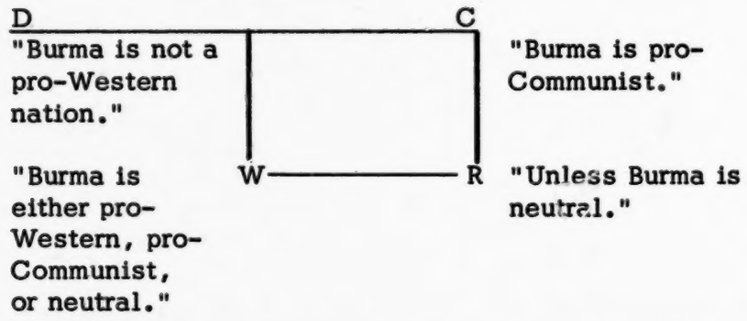
8.4.1.1 Irrelevant Alternatives

Reservations of this variety stipulate that the alternative categories are irrelevant to the particular I cited (although they may be relevant when applied to other I's).



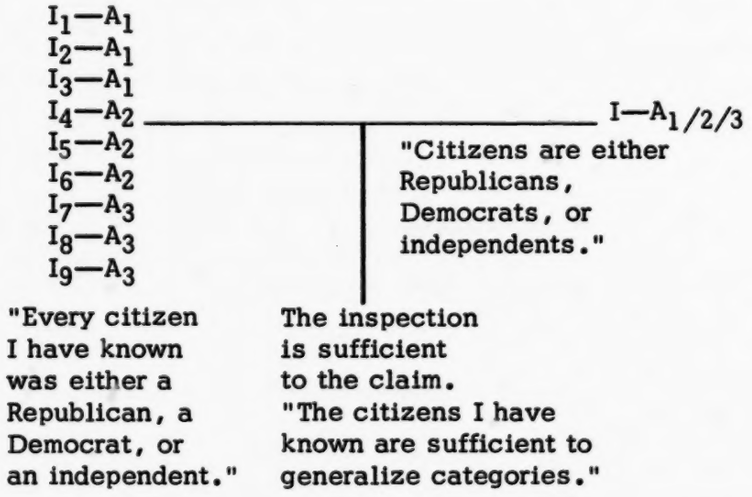
8.4.1.2 Equivocal Use of Categories

Reservations of this variety stipulate that not all of the categories which appear in the warrant appear in the data and in the claim taken together. Such reservations may also stipulate that categories appearing in the warrant appear more than once in the data and the claim taken together, or that categories appear in the data and the claim which do not appear in the warrant.



8.4.2 Alternative-Supportive Reasoning

The assertive content of alternative warrants may be challenged and when challenged may be supported by an appeal to an inductive argument based on inspection of instances to determine what alternate attributes or class memberships can be observed.



8.4.3 Reservations to Alternative-Supportive Reasoning

The reservations which apply to alternative-supportive reasoning include those which apply to other supportive reasoning, i.e., atypical instances, equivocal instances, and insufficient instances. Three additional reservations are particularly applicable to alternative-supportive reasoning.

8.4.3.1 Non-Exhaustive Categorization

Reservations of this variety stipulate that the list of alternatives in the warrant does not completely list the alternative ways of classifying I or does not present a complete enumeration of the alternative attributes which I may possess.

8.4.3.2 Inconsistent Division

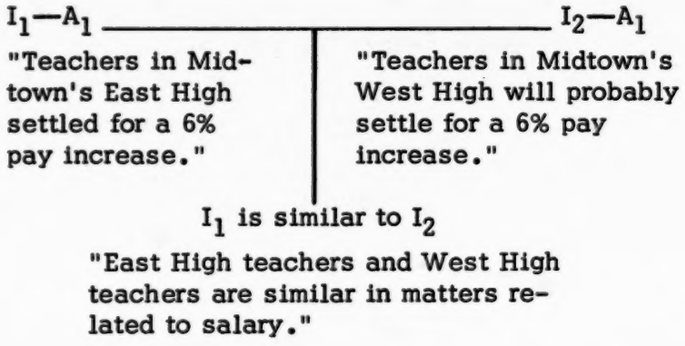
Reservations of this variety stipulate that the categories presented in the warrant are not derived from the consistent use of a basis for distinguishing the subclasses of a class; consequently, the alleged alternatives may overlap.

8.4.3.3 Non-Exclusive Categories

Reservations of this variety stipulate that the alleged alternatives are not mutually exclusive; therefore I may fall into more than one category or have more than one of the attributes presented.

8.5 Parallel-Case Reasoning

The warrant in parallel-case reasoning asserts that I_1 and I_2 are essentially similar. The data predicate A_1 of I_1, and the claim predicates A_1 of I_2.

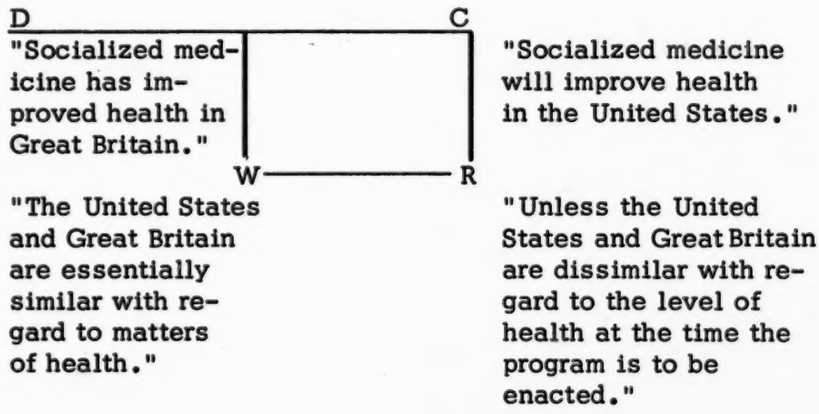

I1—A1
I2—A1
"Teachers in Midtown's East High settled for a 6% pay increase."
"Teachers in Midtown's West High will probably settle for a 6% pay increase."
I1 is similar to I2
"East High teachers and West High teachers are similar in matters related to salary."

8.5.1 Reservations to Parallel-Case Reasoning

Reservations to parallel-case reasoning stipulate that the similarity of I_1 to I_2 may not apply to A_1.

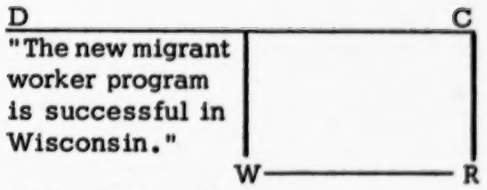
8.5.1.1 Essential Dissimilarities

Reservations of this variety stipulate that there are differences between I_1 and I_2 which make it unlikely that I_2 shares the attribute A_1.


D
C
"Socialized medicine has improved health in Great Britain."
"Socialized medicine will improve health in the United States."
W
R
"The United States and Great Britain are essentially similar with regard to matters of health."
"Unless the United States and Great Britain are dissimilar with regard to the level of health at the time the program is to be enacted."

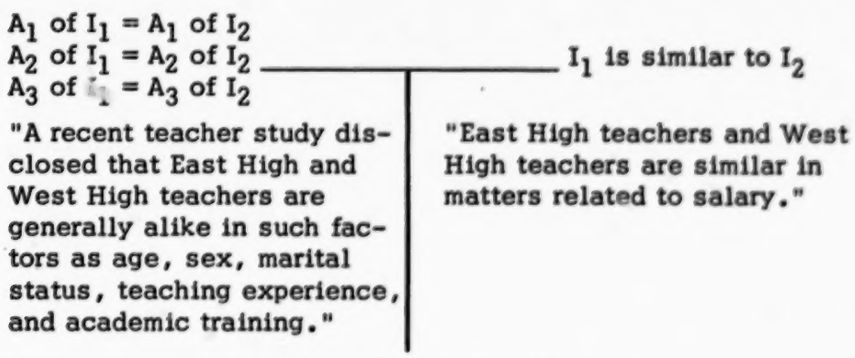
8.5.1.2 Non-Essential Characteristics

Reservations of this variety stipulate that the points of similarity between I_1 and I_2 are not relevant to the attribute A_1.


D
C
"The new migrant worker program is successful in Wisconsin."
"The new migrant worker program will be successful in Minnesota."
W
R
"Wisconsin and Minnesota are essentially similar economically."
"Unless the migrant worker program is more a social than an economic one."

8.5.2 Parallel-Case—Supportive Reasoning

The warrant to parallel-case reasoning may be challenged and when challenged may be met by a comparison of I_1 and I_2 with respect to relevant attributes (A_1-A_x).

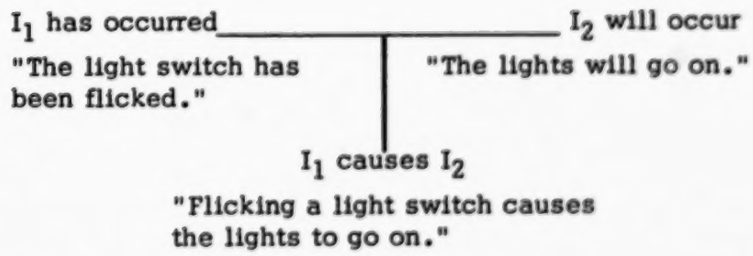

A1 of I1 = A1 of I2
A2 of I1 = A2 of I2
A3 of I1 = A3 of I2
I1 is similar to I2
"A recent teacher study disclosed that East High and West High teachers are generally alike in such factors as age, sex, marital status, teaching experience, and academic training."
"East High teachers and West High teachers are similar in matters related to salary."
The inspection is sufficient to the claim.
"The teachers and attributes studied are sufficient to generalize similarity in salary matters."

8.5.3 Reservations to Parallel-Case—Supportive Reasoning

The reservations which apply to parallel-case—supportive reasoning are the same as those which apply to other supportive reasoning, i.e., atypical instances, equivocal instances, and insufficient instances.

8.6 Cause-Effect Reasoning

The warrant in cause-effect reasoning asserts that the occurrence of an event (I_1) is responsible for the occurrence of another event (I_2). The data for a cause-effect claim state that I_1 has occurred (will occur or is occurring) and the claim asserts that I_2 will occur (has occurred or is occurring).

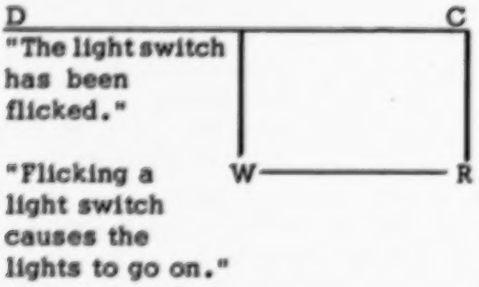

I1 has occurred
I2 will occur
"The light switch has been flicked."
"The lights will go on."
I1 causes I2
"Flicking a light switch causes the lights to go on."

8.6.1 Reservations to Cause-Effect Reasoning

Reservations to cause-effect reasoning stipulate that the normal cause-effect relationship between I_1 and I_2 may not hold in this particular case.

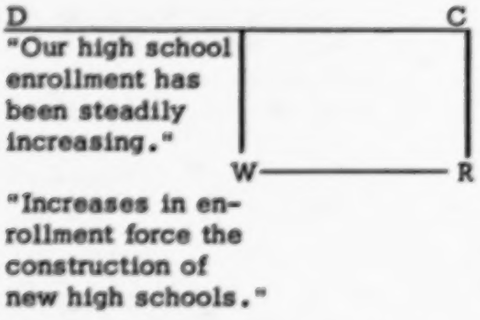
8.6.1.1 Intervening Cause

Reservations of this variety assert that I_1 and I_2 are related by a chain of events, some members of which are not present in this particular case.


D
C
"The light switch has been flicked."
"The lights will go on."
"Flicking a light switch causes the lights to go on."
W
R
"Unless the wires are broken or the bulbs have burned out."

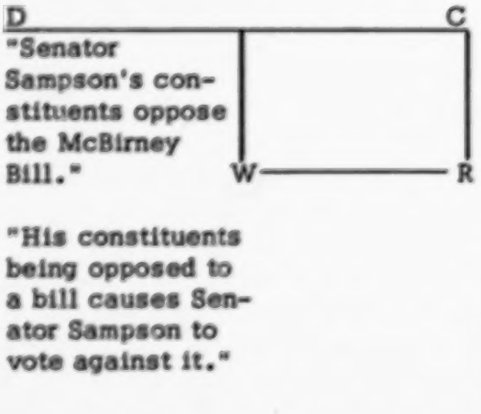
8.6.1.2 Part Cause

Reservations of this variety stipulate that I_1 only causes I_2 in conjunction with other independent causes, some of which are not present in this particular case.


D
C
"Our high school enrollment has been steadily increasing."
"A new high school building will be constructed."
W
R
"Increases in enrollment force the construction of new high schools."
"Unless there are unused classrooms in the present high school."

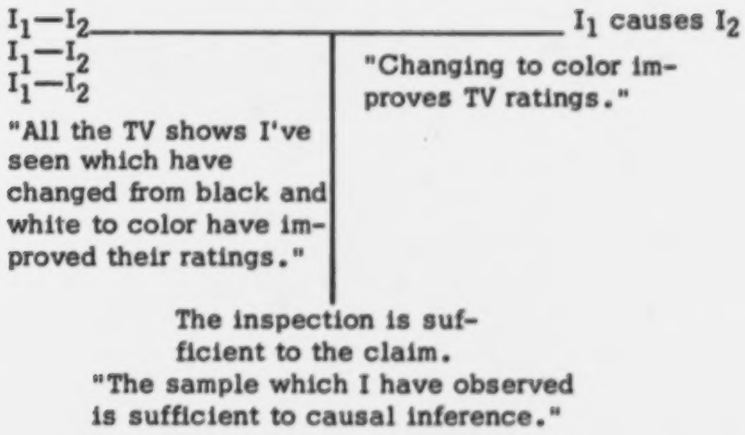
8.6.1.3 Counteracting Cause

Reservations of this variety assert the existence of other causes which might break the causal connection between I_1 and I_2 but which are neither links in a causal chain connecting the two nor the mere absence of contributing causes.


D
C
"Senator Sampson's constituents oppose the McBirney Bill."
"Senator Sampson will vote against the McBirney Bill."
W
R
"His constituents being opposed to a bill causes Senator Sampson to vote against it."
"Unless Senator Sampson is receiving pressure to the contrary from the President and from his party leaders."

8.6.2 Cause–Effect—Supportive Reasoning

The assertive content of causal warrants may be challenged and when challenged may be defended by an inductive argument in which previous instances of the joint occurrence or covariance of I_1 and I_2 are examined.


I_1—I_2
I_1—I_2
I_1—I_2
"All the TV shows I've seen which have changed from black and white to color have improved their ratings."
I_1 causes I_2
"Changing to color improves TV ratings."
The inspection is sufficient to the claim.
"The sample which I have observed is sufficient to causal inference."

8.6.3 Reservations to Cause-Effect—Supportive Reasoning

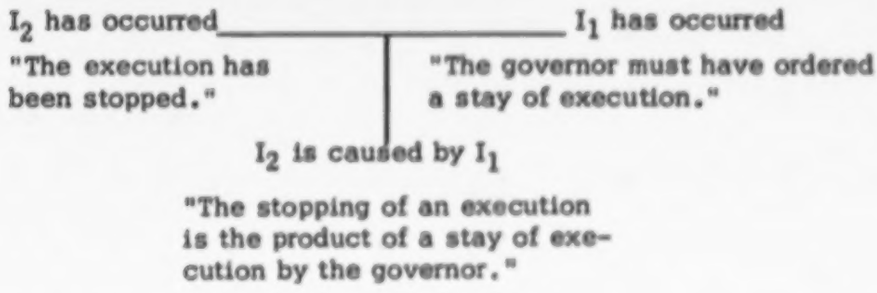
The warrant in an argument establishing a causal connection between two events is subject to the same reservations as apply to inductions in other supportive reasoning, i.e., atypical instances, equivocal instances, and insufficient instances. In addition, the following reservation may be raised:

8.6.3.1 False Cause

Reservations of this variety stipulate that the inspection may be confusing a temporal sequence with a causal sequence. Reservations of this sort are frequently referred to as the fallacy of post hoc ergo propter hoc.

8.7 Effect-Cause Reasoning

The warrant in effect-cause reasoning asserts that the occurrence of an event (I_2) is caused by the occurrence of another event (I_1). The data for an effect-cause claim state that I_2 has occurred (will occur or is occurring), and the claim asserts that I_1 has occurred (will occur or is occurring). Effect-cause reasoning is appropriate when the effect is known and the cause is in question.

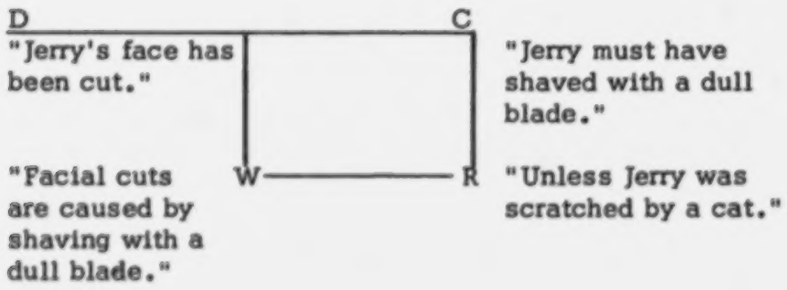

I_2 has occurred
"The execution has been stopped."
I_1 has occurred
"The governor must have ordered a stay of execution."
I_2 is caused by I_1
"The stopping of an execution is the product of a stay of execution by the governor."

8.7.1 Reservations to Effect-Cause Reasoning

Reservations to effect-cause reasoning stipulate that the inferred effect-cause relationship between I_2 and I_1 does not pertain in this case. The three varieties of reservations to cause-effect reasoning (i.e., intervening, part, and counteracting cause) are also applicable to reasoning from effect to cause. For example, part cause reservations would stipulate that the cause claimed is not warranted due to the absence of other contributing causes in this instance. In addition, wrong cause reservations specifically pertain to effect-cause reasoning.

8.7.1.1 Wrong Cause

Reservations of this variety stipulate that alternative causes are more reasonable to account for the occurrence of I_2 in this particular case.


D
C
"Jerry's face has been cut."
"Jerry must have shaved with a dull blade."
W
R
"Facial cuts are caused by shaving with a dull blade."
"Unless Jerry was scratched by a cat."

8.7.2 Effect-Cause—Supportive Reasoning

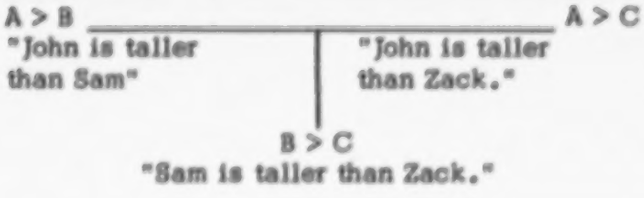
The assertive content of the warrant in effect-cause reasoning may be challenged and when challenged may be established by the same moves used for a cause-effect warrant.

8.7.3 Reservations to Effect-Cause—Supportive Reasoning

Since warrants for effect-cause reasoning are essentially the same as warrants for cause-effect reasoning, and since the warrants when challenged require the same justificatory moves, the reservations to effect-cause—supportive reasoning are the same as those for cause-effect—supportive reasoning (8.6.3 above).

8.8 Comparative Reasoning

In comparative reasoning the burden of the warrant is born by the relational term which appears in all three statements of the argument (brother of, north of, greater than, better than). The term need not be constant throughout the argument, but the relational terms used must be complements of each other. All three statements of the argument assert the relative position of individuals, members, or classes in terms of some attribute common to the individuals, members, or classes. The positional feature of comparative arguments is exhibited by the model below.



8.8.1 Reservations to Comparative Reasoning

Reservations to comparative reasoning operate on the positioning of the terms throughout the argument or on the terms themselves.

8.8.1.1 Confused Positioning

Reservations of this sort state that the positions given the individuals in the data and the warrant do not permit the inference of the claim; for example, Data: A > B, warrant: B < C; from this no greater than or less than statements can be made about A and C.

8.8.1.2 Non-relational Terms

Reservations of this sort assert that the phrases used in a relational manner are not relational terms (known to, friend of, etc. are occasionally misused in this fashion).

8.8.2 Comparative-Supportive Reasoning

Both the data and the warrant in comparative reasoning may be supported by inspecting the individuals cited in the relationship or by other appropriate relational arguments.

8.8.3 Reservations to Comparative-Supportive Reasoning

The reservations which apply to comparative-supportive reasoning involve either a challenge to the observation on which the comparison was based (i.e., the asserted relationship is inaccurate) or a challenge to the comparative reasoning advanced in justification of the previous warrant (i.e., reservations of the same order as in 8.8.1 above).

CONCEPT CLUSTER	CRITICAL ABILITY
9. Concepts related to the strength of claims justified through testimony or reasoning	Recognizing the degree of acceptability of a claim as determined by the various elements in an argument

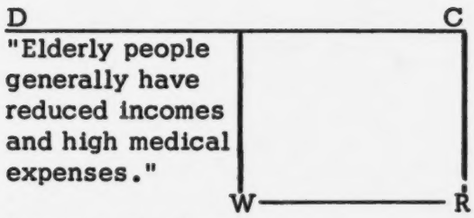
TERM	CONCEPT EMBRACED BY TERM
(Qualifiers)	Qualifiers are terms which express the strength of the claim (e.g., possibly, probably, or certainly) in view of the justifications offered in its behalf.

Claims justified through testimony are qualified to the extent that the source of the testimony violates the rules of authority or the statement of the testimony is itself qualified.

T	C
"Time magazine reports that most of the people who remain employed after age sixty-five earn over $15,000 per year."	"People over sixty-five who have not retired probably (Q) have high incomes."

In this example the qualifier "probably" may reflect both Time's qualification of its statement (i.e., "most") and a judgment of the source of the testimony (i.e., Time is usually reliable).

Qualifiers to claims justified through reasoning express the strength of the connection between data and claim by virtue of previous qualification of data or warrant and/or previous reservations.


D
C
"Elderly people generally have reduced incomes and high medical expenses."
"Therefore, elderly people generally (Q) experience difficulty in paying for health services."
W
R
"People who have reduced incomes and high medical expenses experience difficulty in paying for health services."
"Unless they have extensive savings/ are living with their children/ have not retired."

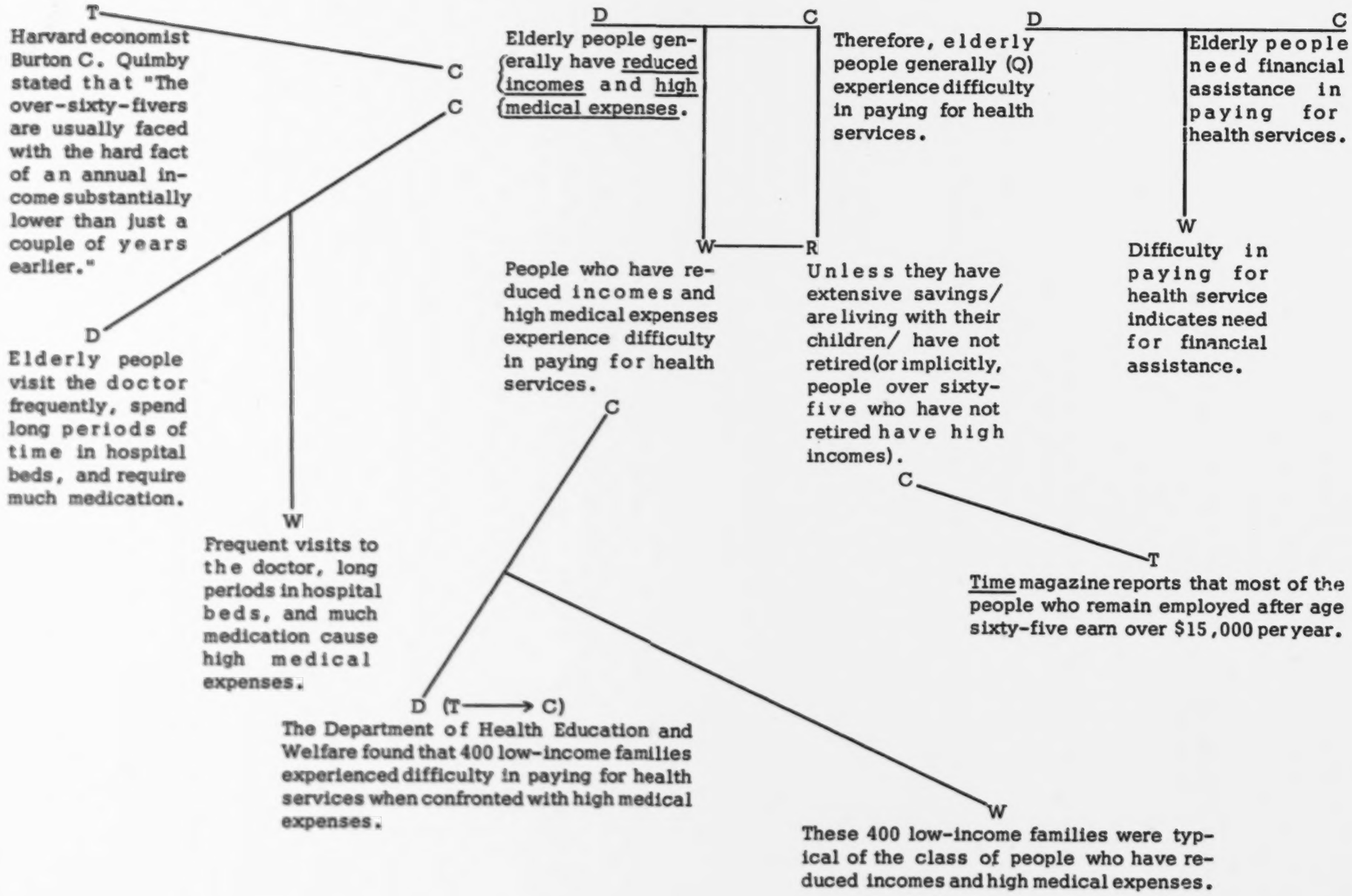
CONCEPT CLUSTER	CRITICAL ABILITY
10. Concepts related to the functional connections in a chain of several arguments	Analyzing the functions of statements in complexes of interrelated arguments

TERM	CONCEPT EMBRACED BY TERM
(Argument Chains)	Just as the challenge to a claim requires justification through argument by testimony or by reasoning, challenges to data, warrants, or reservations in a given argument will require additional arguments for their support. In addition, some claims may be accepted by their recipients and come to function as warrants, data, or reservations in subsequent arguments. A complete controversy may, therefore, consist of a number of interrelated arguments as illustrated on the following page.

CONCEPT CLUSTER	CRITICAL ABILITY
11. Concepts related to irrelevancies in arguments	Detecting dissuasions and diversions

TERM	CONCEPT EMBRACED BY TERM
	In popular discourse advocates frequently employ emotional embellishments and psychological appeals in arguments. Although such appeals are often irrelevant to the point at issue in an argument, their frequency and persuasive effectiveness demand that they be recognized. These irrelevancies are of two types: dissuasions and diversions.
11.1 Dissuasions	Dissuasions involve those instances in which the advocate uses language in such a way as to discourage the questioning of a claim.
11.1.1 Persuasive Prefaces	Persuasive prefaces dissuade by the use of language to introduce the claim as though it were unquestionable.

THE INTERRELATIONSHIP OF ARGUMENTS


T
Harvard economist Burton C. Quimby stated that "The over-sixty-fivers are usually faced with the hard fact of an annual income substantially lower than just a couple of years earlier."
C
C
D
Elderly people visit the doctor frequently, spend long periods of time in hospital beds, and require much medication.
W
Frequent visits to the doctor, long periods in hospital beds, and much medication cause high medical expenses.
D
C
Elderly people generally have reduced incomes and high medical expenses.
W
R
People who have reduced incomes and high medical expenses experience difficulty in paying for health services.
D
C
Therefore, elderly people generally (Q) experience difficulty in paying for health services.
Unless they have extensive savings/ are living with their children/ have not retired (or implicitly, people over sixty-five who have not retired have high incomes).
D
C
Elderly people need financial assistance in paying for health services.
W
Difficulty in paying for health service indicates need for financial assistance.
C
T
Time magazine reports that most of the people who remain employed after age sixty-five earn over $15,000 per year.
C
D (T ⟶ C)
The Department of Health Education and Welfare found that 400 low-income families experienced difficulty in paying for health services when confronted with high medical expenses.
W
These 400 low-income families were typical of the class of people who have reduced incomes and high medical expenses.

"It is clear that we must end the war in Vietnam."

"Every intelligent person knows that the U.N. is our last hope for peace."

11.1.2 Glittering Generalities

Glittering generalities dissuade by the use of language so general as to defy question.

"This committee stands firmly on the principles of duty and honesty in the conduct of human affairs."

11.1.3 Name-Calling

Name-calling dissuades by the use of language which connotes but does not specify the characteristics in question.

"Bully boy politicians conduct public hearings unfairly."

11.1.4 Technical Terms

Technical terms dissuade by presenting the question in apparently correct language which is unintelligible to the lay participants in a controversy.

"Yet, for all the difficulty of transcending our object-direct pattern of thought, we can construe utterances in the child's mouth as terms, at first, for things or substances."

11.1.5 Circularity

Circularity dissuades by presenting reasons which repeat the claim in another form or which assume that the claim has already been established.

"Professor Smith has poor eyesight because he has weak vision."

"These five senators voted for Communist inspired measures. We call the measures Communist inspired because their supporters consistently vote the 'party line.'"

11.2 Diversions

Diversions involve those instances in which the advocate shifts the focus of the argument to justifications selected for their psychological appeal rather than their relevance to the point at issue. Although the moves embraced by the terms which follow may be relevant to the point in question in an argument, when these moves are irrelevant to the point at issue they may be called diversions. To label these moves diversions, one must be aware of the total context of the argument.

11.2.1 Attacking the Man (Argumentum Ad Hominem)

Attacking the man diverts the argument to questions of personality by degrading persons associated with an idea, event, institution, or course of action.

"This is a bad bill because it was proposed by a Socialist."

11.2.2 Appeal to Populace (Argumentum Ad Populum)

Appeals to populace divert the argument by appealing to the collective passions and prejudices of a group.

"Because we all love democracy and equal rights we must support the poverty bill."

11.2.3 Appeal to Pity (Argumentum Ad Misericordiam)	Appeals to pity divert the argument by playing on the sympathy of the recipient. "Can we now execute this man after he has suffered the torture and anxiety of waiting ten years on 'death row'?"
11.2.4 Appeal to Authority (Argumentum Ad Verecundiam)	Appeals to authority divert the argument by attributing to it the force of unquestionable authority, tradition, or long-standing faith. "Our forefathers pledged their lives to the principle that all men should be allowed equal access to education."
11.2.5 Appeal to Force (Argumentum Ad Baculum)	Appeals to force divert the argument by substituting threats or pressure for reasons. "Unless the Vietniks cooperate we will draft them all."
11.2.6 Appeal to Ignorance (Argumentum Ad Ignorantiam)	Appeals to ignorance divert the argument by suggesting that since opposing claims cannot be understood they must be rejected. "I have never seen a miracle nor do I know anyone who can explain miracles; therefore, miracles cannot occur."
11.2.7 Appeal to Large Numbers (Band Wagon)	Appeals to large numbers divert the argument by suggesting its acceptability to large quantities of people. "Ten thousand women who use Ziff cannot be wrong."
11.2.8 Appeal to Humor and Ridicule (Reductio Ad Absurdum)	Appeals to humor divert the argument by presenting it in a ridiculous form. "We have a War on Poverty, a War on Ignorance, a War on Filth; next we will have a War on Space or a War on Divorce."
11.2.9 Appeal to Speculation	Appeals to speculation divert the argument by presenting hypothetical reasons not amenable to verification in the place of reasons drawn from actual events. "If Goldwater had been elected, he would have bombed Hanoi and we would be out of Vietnam today."

CONCEPT CLUSTER	CRITICAL ABILITY
12. Concepts related to the misuse of language in arguments	Detecting misuses of language

TERM	CONCEPT EMBRACED BY TERM
	Inattention to the meanings of words and sentences used in formulating an argument may frustrate the justification of the claim because of ambiguity or equivocation.
12.1 Ambiguity (Vagueness)	Ambiguity arises when words in a given context can be interpreted in one of several ways and the correct interpretation cannot be clearly determined. Ambiguity may arise from the semantic aspects of language or from the syntax of statements.

"There is soup on the menu."

"Joe's Cafe serves good food every day except Sunday."

12.2 Equivocation

Equivocation occurs when the same or very similar terms are used in both the data and the claim, but the meaning given the term in the data differs from the meaning assigned to it in the claim.

"All that is right should be enforced by law; since voting is a right it should be enforced."

"We have struggled for years against Communist propaganda, but now more men and arms are needed to carry on that struggle."